Claims

What is claimed is:

1. A apparatus for measuring spectral absorbance using unique optical modulator to produce spectral absorbance data comprising:

a) a light source able to produce light in the desired wavelength region to be measured for spectral absorbance.

b) optical modulator capable of temporally changing the spectral wavelength proportion of the light source.

c) sample holder capable of introducing the sample into the light path

d) photosensor for determining the total light intensity after passing through the sample.

2. A method according to claim 1, wherein the optical modulator is between the light source and the sample holder.

3. A method according to claim 1, wherein the sample holder is between the light source and the optical modulator.

4. A method according to claim 2, wherein a lens or focusing mirror is between the light source and the optical modulator.

5. . A method according to claim 2, wherein a lens or focusing mirror is between the optical modulator and sample photosensor.

6. . A method according to claim 3, wherein a lens or focusing mirror is between the light source and sample holder.

7. A method according to claim 3, wherein a lens or focusing mirror is between the sample holder sample photosensor.

8. A method according to claim 1, wherein the photosensor is a silicon photodiode.

9. A method according to claim 1, wherein the optical spectral measurement absorbance range is wavelengths between 180nm and 1050nm.

10. A method for detecting and measuring spectral absorbance of a sample comprising:

a) a light source able to produce light in the desired wavelength region to be measured for spectral absorbance.

b) optical modulator capable of temporally changing the spectral wavelength proportion of the light source.

c) sample holder capable of introducing the sample into the light path

d) photosensor for determining the total light intensity after passing through the sample.

e) a beam splitter for splitting a portion of the light prior to passing through the sample cell to a reference photosensor.

11. A method according to claim 10, wherein the optical modulator is between the light source and the sample holder.

12. A method according to claim 10, wherein the sample holder is between the light source and the optical modulator.

13. A method according to claim 11, wherein a lens or focusing mirror is between the light source and the optical modulator.

14. A method according to claim 11, wherein a lens or focusing mirror is between the optical modulator and sample photosensor.

15. A method according to claim 12, wherein a lens or focusing mirror is between the light source and sample holder.

16. A method according to claim 12, wherein a lens or focusing mirror is between the

sample holder sample photosensor.

17. A method according to claim 10, wherein the photosensor is a silicon photodiode.

18. A method according to claim 10, wherein the optical spectral measurement absorbance range are wavelengths between 180nm and 1050nm.

19. An apparatus for determination of spectral absorbance comprising:

a) optical light source emitting in the desired spectral absorbance region

b) an optical modulator comprised of a circular or spherical optically transmissive element mounted such that a rotation of the element induces a change in the wavelength proportions of the transmitted light in the measurement spectrum area.

c) sample holder capable of introducing the sample into the light path

d) photosensor for determining the total light intensity after passing through the sample.

20. An apparatus for determination of spectral absorbance comprising:

a) optical light source emitting in the desired spectral absorbance region

b) an optical modulator comprised of a circular or spherical optically transmissive element mounted such that a rotation of the element induces a change in the wavelength proportions of the transmitted light in the measurement spectrum area

c) sample holder capable of introducing the sample into the light path

d) photosensor for determining the total light intensity after passing through the sample.

e) a beam splitter for splitting a portion of the light prior to passing through the sample cell to a reference photosensor.

21. A method where claims 1-20 use an analog to digital converter to obtain the output of the photosensor(s).